Silhouette-Based Segmentation of 3D Objects for Industrial Use Cases

Felix Stieglbauer

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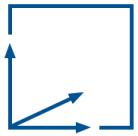


Guided Research

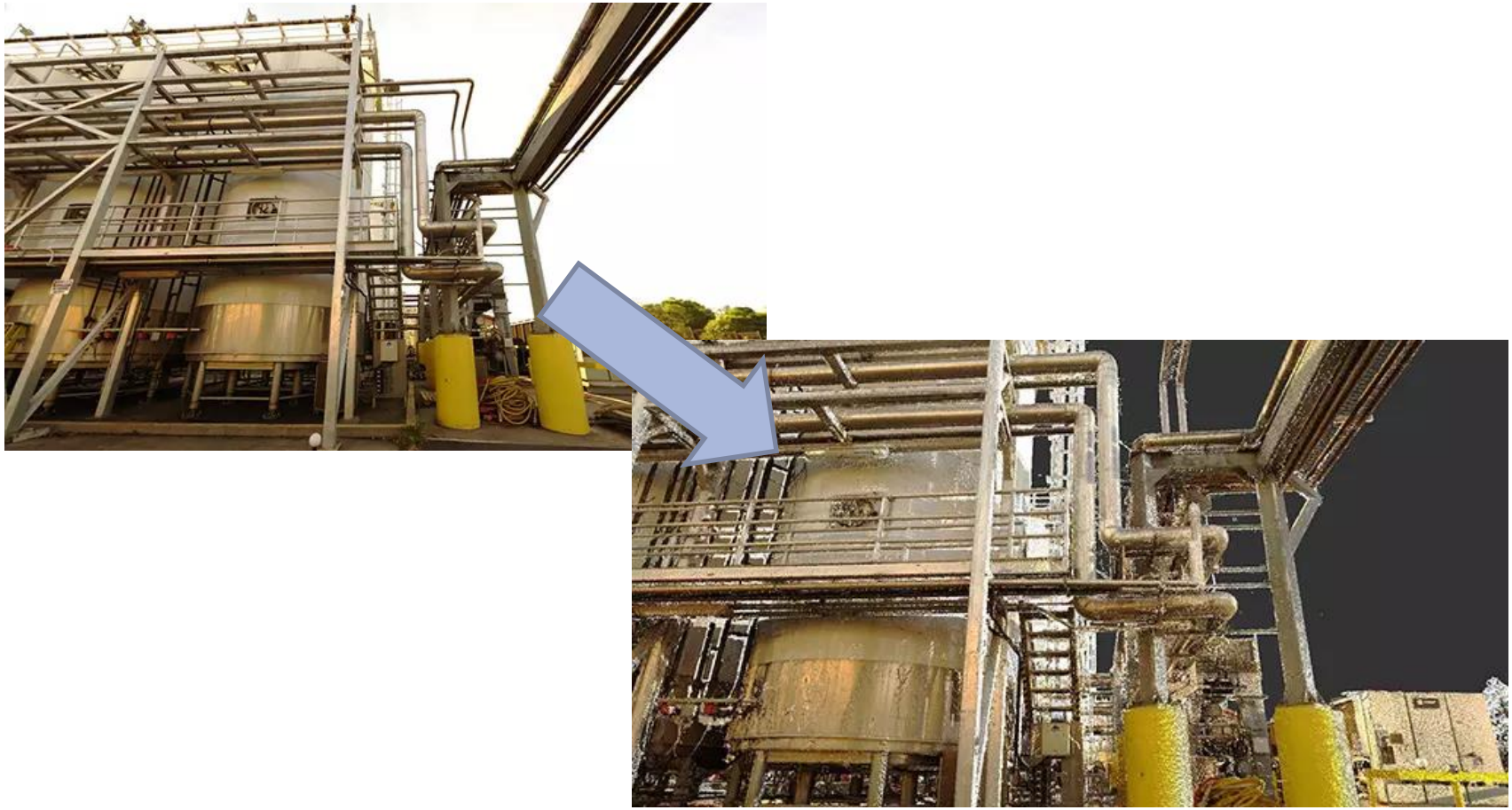
Advisors: Linda Rudolph, Daniel Dyrda

Supervisor: Prof. Gudrun Klinker, Ph.D.

Motivation

Source: 1)

Motivation



Source: 1)

Motivation

Remote maintenance

and

AR-based navigation

Motivation

Problem: Scene changes frequently

→ Complete scans pointless / not feasible

Motivation

Problem: Scene changes frequently

→ Complete scans pointless / not feasible

Solution: Scan iteratively!

Motivation

Source: 2)

Motivation

New problem:

The scanner needs to know what to scan

Source: 2)

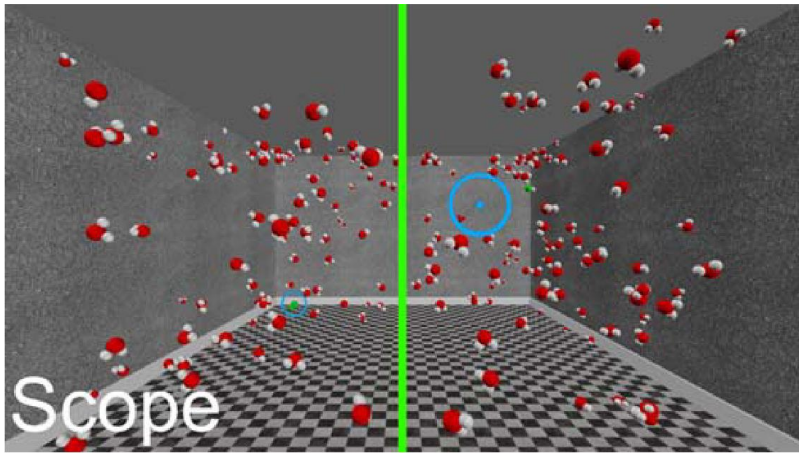
Motivation

New problem:

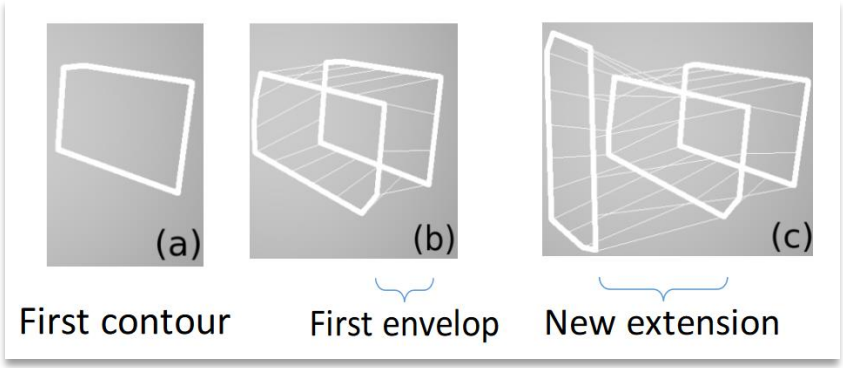
The scanner needs to know what to scan

We will solve this!

Related work



Scope, *source: 3)*



Worm Selector, *source: 4)*

Go'then'tag, *source: 5)*

Requirements

- Visual guidance
- Speed
- Spatial limitation
- Complex three-dimensional setups
- Pen-based input

Requirements

Source: 6)

Requirements

- Visual guidance
- Speed
- Spatial limitation
- Complex three-dimensional setups
- Pen-based input

Requirements

Source: 2)

Requirements

- Visual guidance
- Speed
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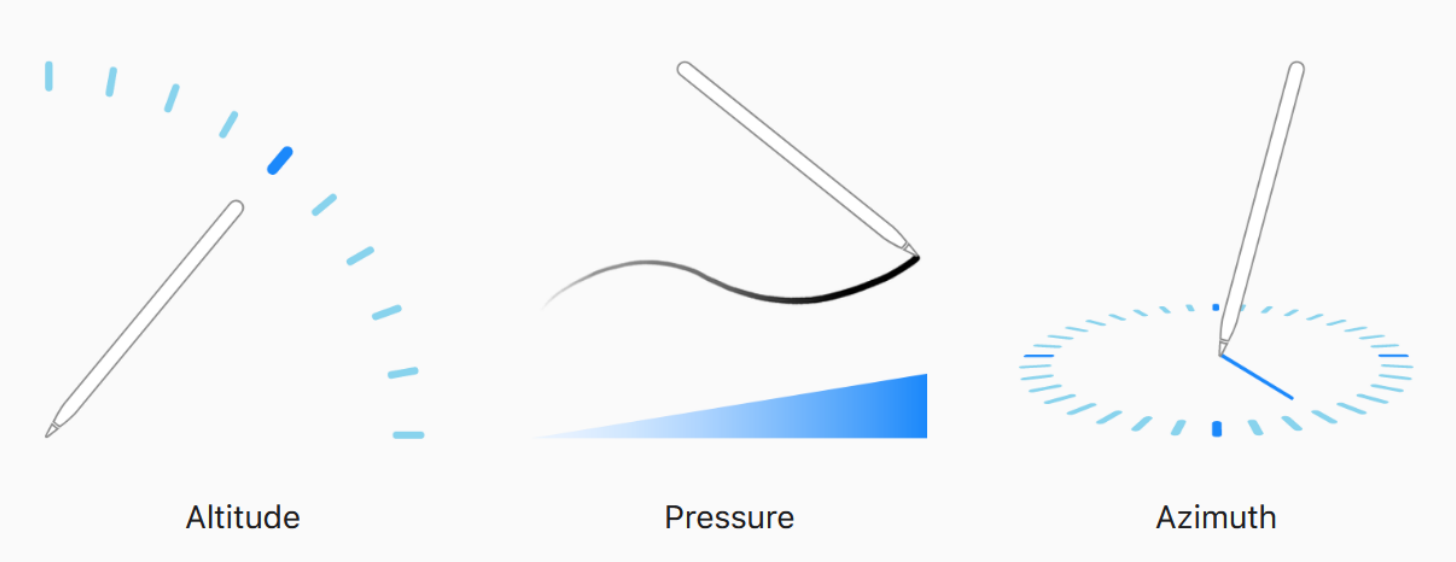
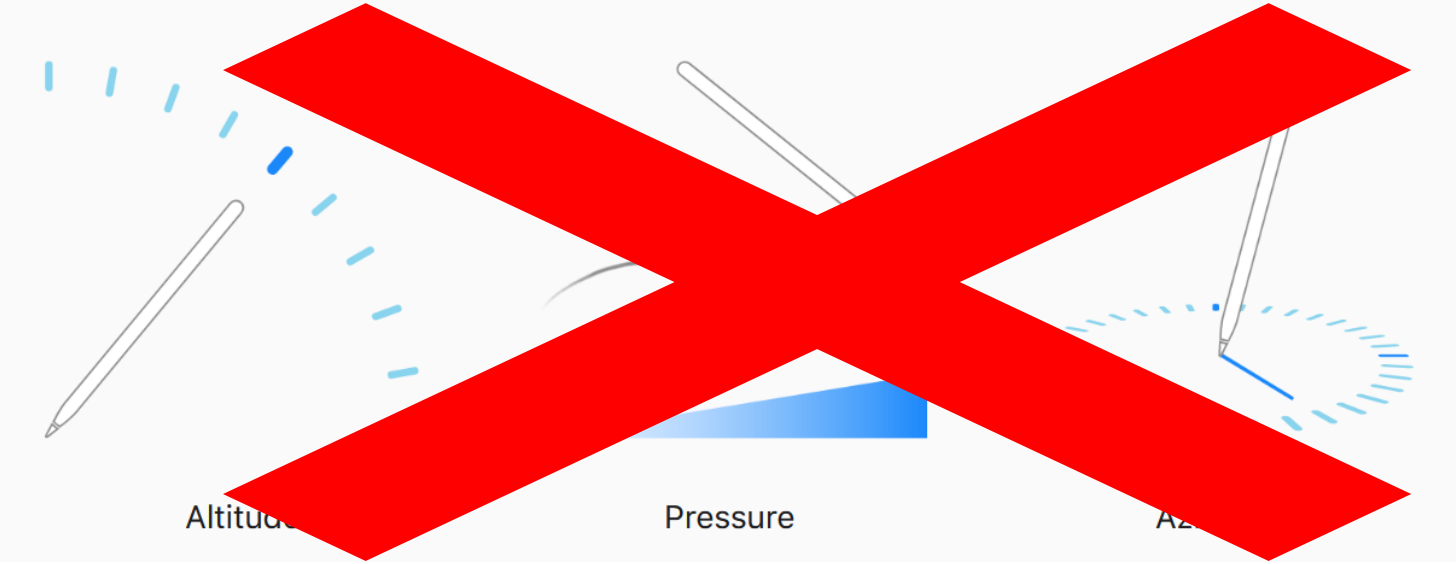
Requirements



Source: 7)

Requirements



Source: 7)

Requirements

- Visual guidance
- Speed
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- Complex three-dimensional setups
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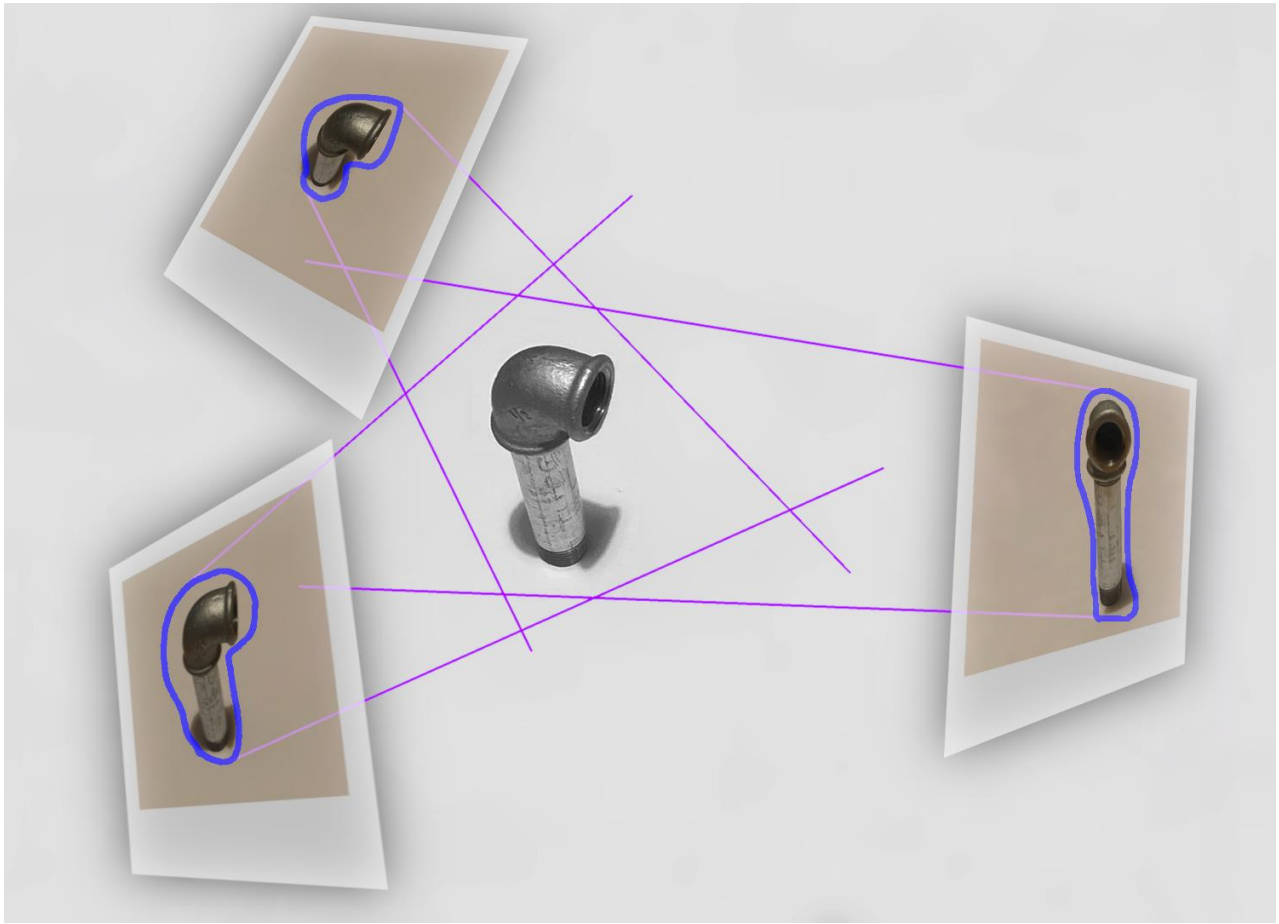
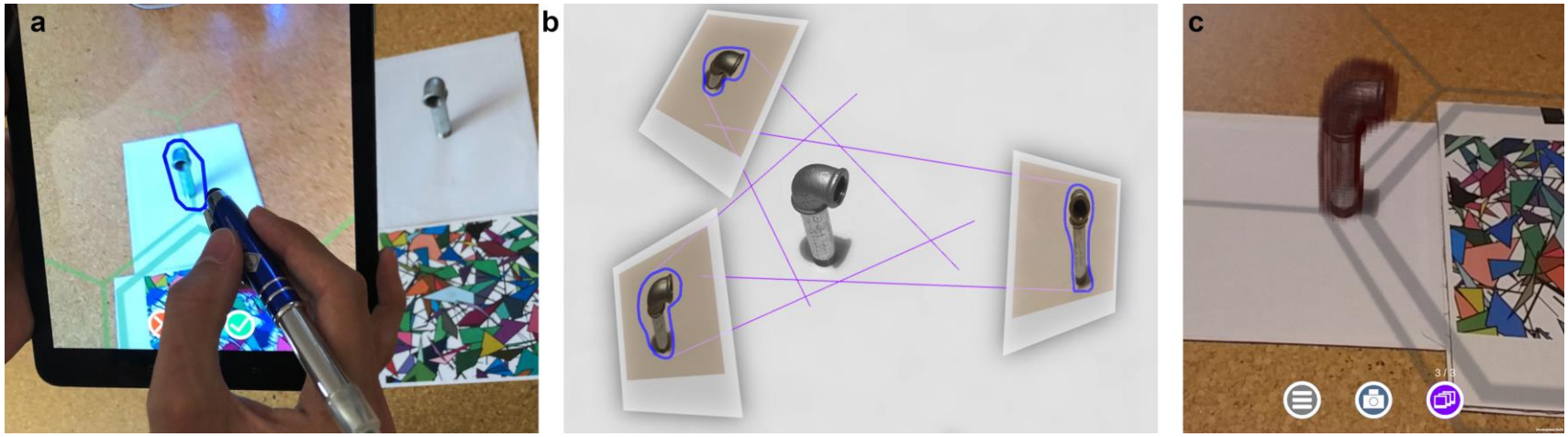
Approach

Source: 2)

Approach



Approach



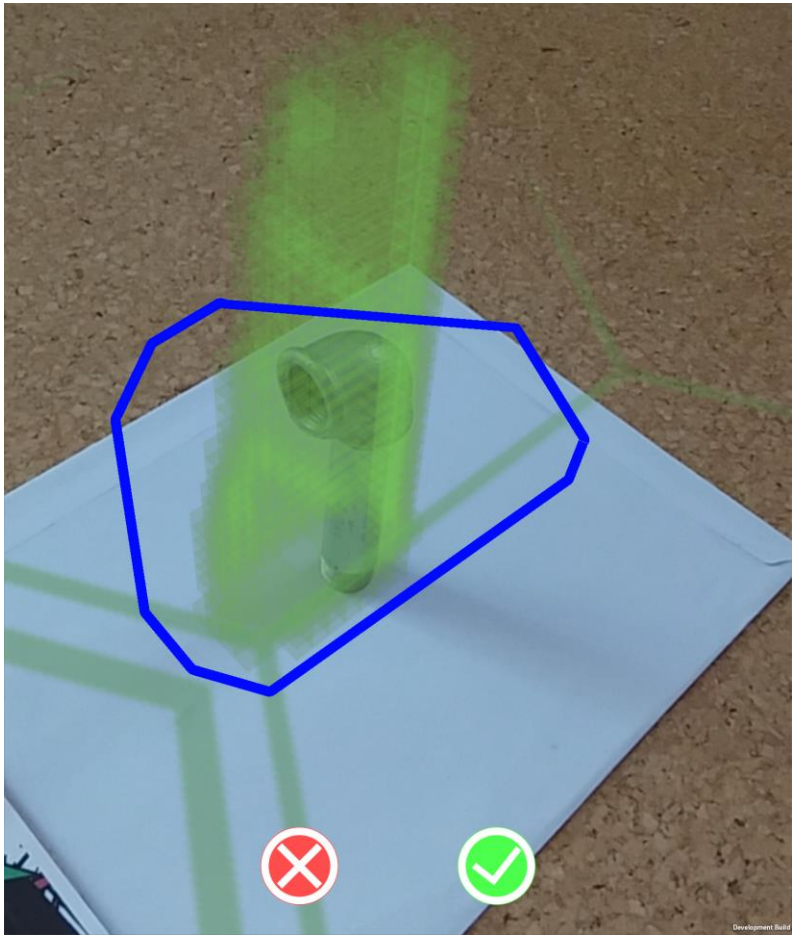
Approach

Let’s see it in action!

Evaluation

- Visual guidance ✓
- Speed ✓
- Spatial limitation ✓
- Complex three-dimensional setups ✓
- Pen-based input ✓

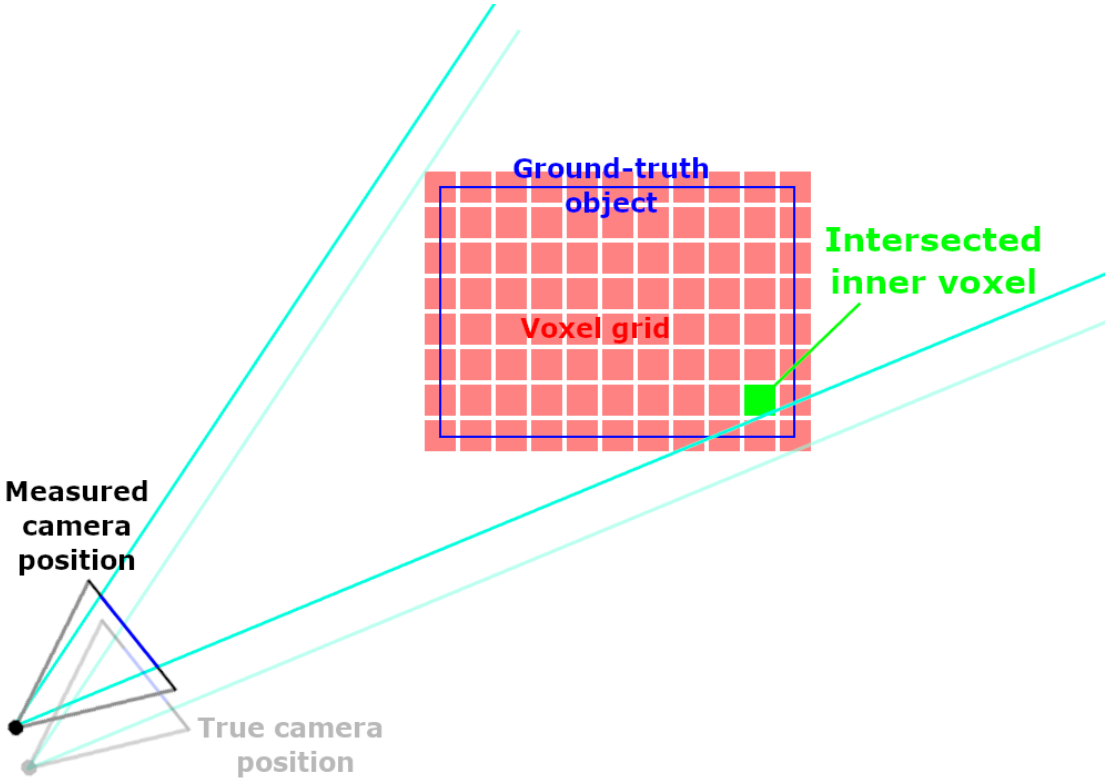
Evaluation – visual guidance



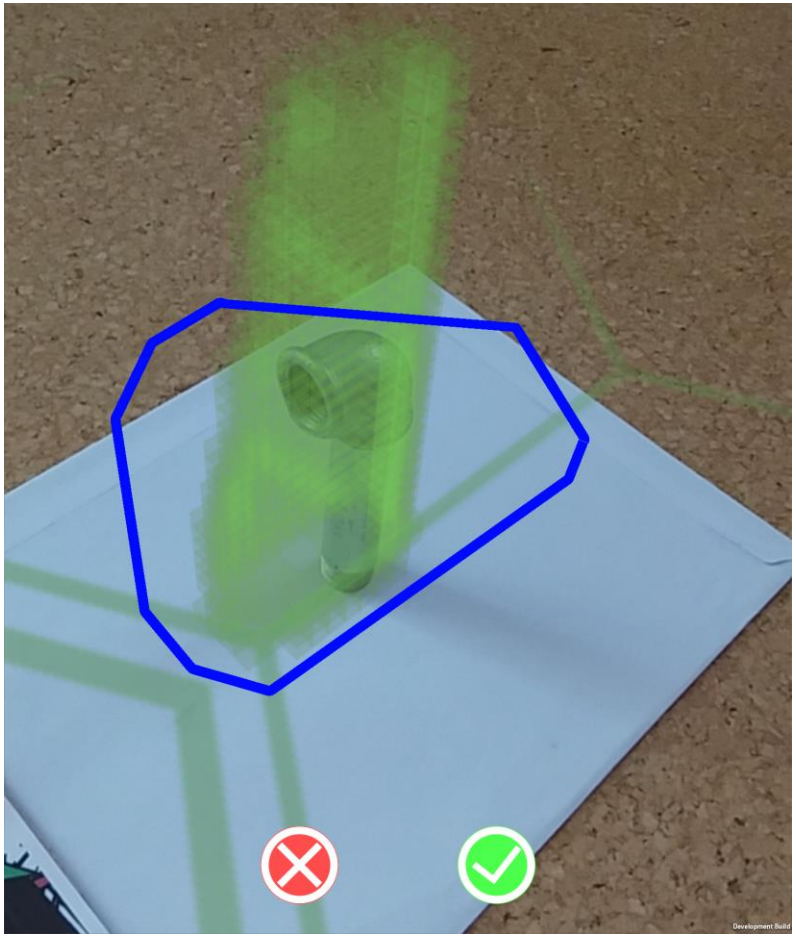
Evaluation

- Visual guidance ✓
- Speed ✓
- Spatial limitation ✓
- Complex three-dimensional setups ✓
- Pen-based input ✓

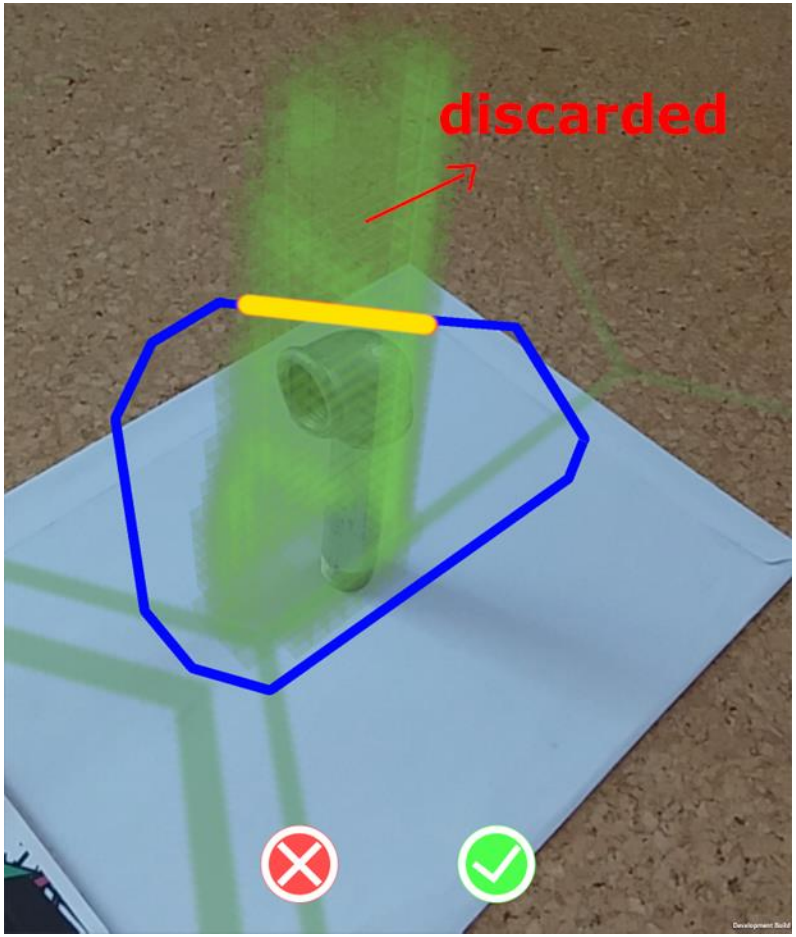
Outlook – compensating faulty measurements



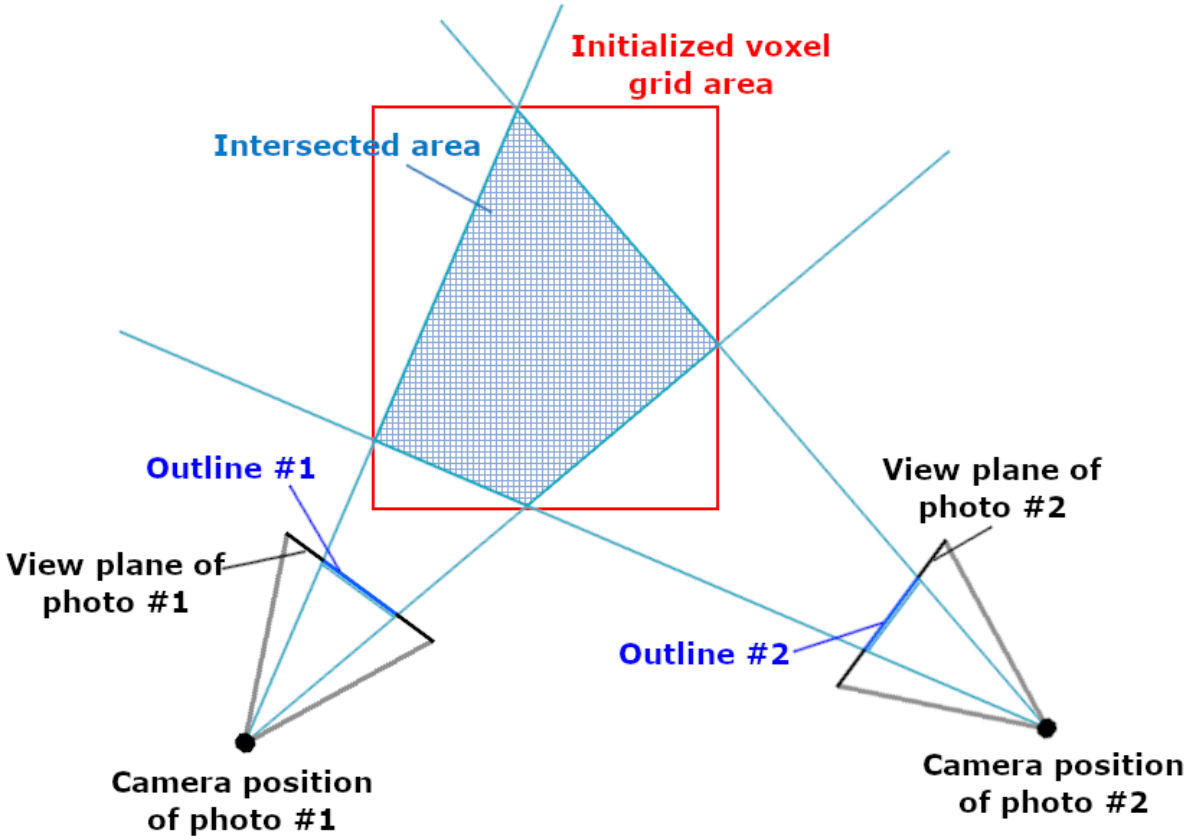
Outlook – compensating faulty measurements



Outlook – compensating faulty measurements



Outlook – enhancing performance



Thank you very much!

List of References

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5) M. Veit and A. Capobianco. Go'then'tag: A 3-d point cloud annotation technique. In *2014 IEEE Symposium on 3D User Interfaces (3DUI)*, pp. 193–194. IEEE, 2014.
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